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TOWARDS A FRAMEWORK FOR INFORMATION AND RESOURCE SHARING BETWEEN FISHERIES LIBRARIES IN AFRICA

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ABSTRACT: What are the conditions necessary for enabling information and resource sharing between a number of fisheries libraries in Africa? What are the constraints? The paper addresses these questions with reference to the networking activities which began in 2002 between the South African Institute of Aquatic Biodiversity (SAIAB) and a group of fisheries libraries in several other African countries, with the co-operation of the FAO Fisheries Library. The basic premise is that there is an imperative to cooperate between such institutions. In the developing world, where institutional resources are scarce, libraries can play a critical role in the access to, collection of and dissemination of information. The questions posed above are explored in a variety of ways. The information capacity of a sample of fisheries libraries in Africa will be reviewed. A comparative survey will investigate the impact of technological developments and access to web-based fisheries information. An overview will be provided of existing African fisheries serial literature, and the challenges of capturing, indexing and disseminating this literature will be addressed. The spectrum of users of fisheries information will be studied, ranging across academic researchers, government departments, the private sector and civil society.

Introduction

This paper explores three main sets of conditions that, it could be argued, are essential to the sharing of information and resources between libraries. First, co-operation and sharing between libraries relies on the presence of African resources to share. Second, there must be organizational capacity to share. Third, sharing requires momentum and sustainability, overcoming inertia and isolation among libraries. Taken together, these overlapping conditions create a framework for the practice of sharing and for analyzing the nature of co-operation.

The developmental challenges of African countries form a contextual backdrop to a discussion of the interactive roles of fisheries libraries, which have the potential to assist with food security, environmental sustainability, commercial ventures and the generation of new specialist knowledge. A more specific context involves case studies of institutional co-operation and sharing between the fisheries libraries from African countries. The basic premise is that there is a developmental imperative to cooperate. In the developing world, where institutional resources are scarce, libraries can play a critical role in providing access to, collection of and dissemination of information. Initiatives for co-operation and resource sharing need to come from and be driven by participants within the African continent if they are to have any long-term sustainability.

The three sets of conditions for resource sharing provide a structure for this paper. Each condition generates its own questions, provides an opportunity for outlining current practices of co-operation, and highlights constraints that need to be addressed.

Condition One: There must be Africa-specific resources for fisheries libraries to share

This paper is informed by data that was gathered about fisheries libraries as part of an ongoing network project that began in 2002 between FAO, the South African Institute for Aquatic Biodiversity (SAIAB) and a group of 12 fisheries libraries in ten African countries (Lawrie *et al* 2002; Shaw & Collins 2003; Shaw and Collins 2004). The substantial resources of SAIAB are itemized later in the paper when the operation of this particular network is described. An initial attempt to document the profile of some of the other libraries involved is to be found in Appendix A.

In addition to the holdings of these libraries, what are the other resources that are available for African fisheries libraries to share?

Firstly, the *Directory of Fisheries and Aquaculture Information Resources in Africa* is maintained by the Food and Agricultural Organization (FAO) Fisheries Library and can be found at http://www.fao.rog/fi/library/dir_aft.htm. This directory provides an overview of the status of libraries, information centers, information products and services. The directory aims to promote information resource sharing activities between fisheries and aquaculture institutions in Africa. The directory includes details of African fisheries internet sites and a list of current African fisheries and aquaculture serial publications. The directory is maintained by FAO, but responsibility lies with African institutions to advise of changes and additions.

An analysis of the list of serial publications, available at http://www.fao.rog/fi/library/dir_aft.htm, indicates that there is a total of 255 known titles from 33 countries. There is nothing recorded from the remaining 22 countries of Africa. Of those recorded, the majority of publications fall into the category of grey literature, consisting mainly of institutional and project reports or newsletters. South Africa (48

titles) and Nigeria (24 titles) account for 28% of the total. Another 9 countries publish five or more titles each, totaling 119 publications (46.6% of the total). It is interesting to note, from a survey conducted by Fodé Kaba (2005) of CNSHB in Guinea, that only 4% of 115 African fisheries serial titles in the list can be accessed via the Internet. Analysis of the serials list gives rise to the question of how many African publications there may be that are not incorporated in this list.

Secondly, ODINAFRICA has two specific resource gathering and sharing initiatives relevant to this discussion. (Masalu, 2004 and Keita, 2005) The first is AFRILIB which can be found at http://ioc3.unesco.org/odinafrica/contents.php?id=268. ARILIB focuses on marine science, and is a collective electronic catalogue of documents held in the libraries of the 25 institutions which participate in ODINAFRICA. These institutions are located in the following countries: Benin, Cote d'Ivoire, Ghana, Guinea, Kenya, Madagascar, Mauritania, Morocco, Mozambique, Senegal, Seychelles, Tanzania, Togo and Tunisia. The second ODINAFRICA initiative is OdinPubAfrica which can be found at http://ioc3.unesco.org/odinafrica/categories.php?category_no=125. Established as recently as August 2005, and with a total of some 5,000 records, OdinPubAfrica has taken over the management of the Western Indian Ocean Publications (WIOPUB) database and extended the region of coverage within Africa. Arame Keita (2005) states:

'OdinPubAfrica is an electronic depot and dissemination system of publications on the marine sciences in Africa. It contains the pre-prints, published articles, technical reports, theses and other scientific documents in the field of marine and other related disciplines in full text and digital formats, published by African researchers affiliated …in the ODINAFRICA project.'

Thirdly, web-based systems and services have been established to disseminate academic journals published in Africa. An important example is African Journals Online (AJOL) which can be accessed on http://www.ajol.info/. AJOL is not a publisher; it hosts journal content online and seeks to provide international visibility for participating journals. The AJOL database consists of 226 titles and includes the following core aquatic sciences and fisheries journals:

- *African Journal of Aquatic Science* (South Africa)
- *Journal of Aquatic Sciences* (Nigeria)
- *Tropical Freshwater Biology* (Nigeria)
- *African Journal of Tropical Hydrobiology and Fisheries* (Uganda)

Fourthly, some African publications are covered by international databases. A major source is Aquatic Sciences Fisheries Abstracts (ASFA). FAO provides the secretariat and co-ordinates the input of records from over fifty input centers around the world. Although relatively limited in its coverage of African literature, a number of steps are being taken to address this – a point discussed later in this paper. Commercially published databases, such as Commonwealth Agricultural Bureau International (CABI), Aquatic Biology, Aquaculture and Fisheries Research (ABAFR), Fish and Fisheries Worldwide (FFW)

include developing countries fisheries literature. ABAFR and FFW are published by NISC SA, with a commitment to include African material. Since 1999 the FAO Fisheries, Information, Data and Statistics Unit (FIDI) has distributed the ASFA and ABAFR CD-ROMs or ASFA online to African fisheries institutions in Low Income Food Deficit Countries (LIFDCs). A study (Lawrie et al, 2004) of coverage of African fisheries publications in the ASFA and ABAFR databases in 2002 indicated that almost 50% of the identified titles were not covered. The low profile of African publications among international database publishers contributions to this low participation rate.

Fifthly, linkages with tertiary teaching and research institutes offers scope and opportunities for access to a broader base of resources. In 2000 the Association of African Universities (AAU) launched the Database of African Theses and Dissertations (DATAD), which can be accessed on www.aau.org/datad. Its objective has been to build a regional database of theses and dissertations produced in African universities, and to create capacity in African universities for collection, management and dissemination of theses and dissertations electronically. Initially produced on CD-ROM, an online facility was introduced in 2003. DATAD is co-ordinated by the AAU office in Accra, Ghana. Its founding universities are concentrated in East and West Africa.

Libraries attached or linked to well-resourced centers, such as some universities, have e-access to a growing number of publications often enabled through consortia agreements. A good example of this is Rhodes University and SAIAB. As a shared facility with the Rhodes University Library, the SAIAB Library has access to substantial online electronic information resources. The three most extensively used by SAIAB researchers and library users are the following:

1. Academic Search Premier (via EBSCOhost) – provides full text access to more than 4 500 publications.
2. ScienceDirect – provides full text access to more than 1 800 titles of the Elsevier Science journal collection.
3. SpringerLink – provides access to more than 4 500 full text journals.

Another example of the benefits of such partnerships is the enhanced capacity gained by the Library of the Institute of Development Studies in its relationship with the University of Zimbabwe Library (Miambo, 2002).

Linkages with universities are particularly significant, given the inter-disciplinary nature of fisheries research. Access to university libraries enhances the ability to share resources from fields such as economics, agriculture, food security, community development, zoology, geography, nutrition, biology, ecology, technology, environmental sciences, and history.

A sixth set of available resources consists of a number of known specialized local collections of African fisheries and aquatics literature. The examples given here include those at NIFFR in Nigeria, FIRRI in Uganda and Bunda College in Malawi. Since the

mid-1980s, NIFFR has built up a substantial collection of current and retrospective material on Nigerian fisheries and aquatic sciences (Ibeun, 2004). The collection has over 2120 documents. NIFFR publishes the *Nigerian Fisheries and Aquatic Sciences Abstracts*, now in its 11th edition. At FIRRI there is a significant collection of African Lakes material, dating back to the 1920s. Material includes annual reports, occasional papers, grey literature, published research, theses and other special research studies (Palamar, 2004). At Bunda College there is a concerted effort to collect and digitize material for their Malawiana Collection (Salanje, 2005). Initiatives such as these reinforce the role of the librarian in gathering, and making available, specific grey literature. There may well be other such collections which need to be recognized and made more accessible. Local special collections carry potential for collecting indigenous knowledge resources.

At its broadest level, the quantity of Africa-specific fisheries resources to share is dependent on levels of research, data generation and publication by African fisheries researchers. Local or regional production of research knowledge by African scientists is on a scale far lower than that of developed, knowledge-rich countries. This is in large part due to the relative paucity of well-funded research universities and centers. After two or more decades of neglect, there are a number of initiatives to reinvigorate Africa's tertiary institutions, with particular emphasis on the contributions of science and technology to development. The Science and Technology Action Plan of the New Partnership for Africa's Development (NEPAD) and the United Nations Millennium Project's Task Force 10 on Science, Technology and Innovation have strengthened the view that building capacity in science is critical for sustainable development in Africa (Ng'ang, 2005). Mamphela Ramphela (2005) highlights the limits of development policy which has, in the past, concentrated on funding primary schooling to the neglect of the university sector and so limiting the growth of universities as creative centers of professional and research development.

Despite the limits to quantities of resources available, the amounts of information and resources for sharing amongst African fisheries libraries are significant and provide a base from which to operate. This leads directly to the second set of conditions necessary for sharing.

Condition Two: Libraries must have the capacity to share

Fisheries libraries need to be well organized and resourced so that in addition to their internal operation they have the capacity to share their resources and to enable their users to access resources from other libraries. Libraries in developed countries with significant funding for infrastructure and qualified personnel are able to run their internal and sharing operations in parallel. Less well-resourced libraries, which tend to be reliant more on donor funding than local institutional support and funding, find it difficult to build strong and sustained internal organization. Jordan (2004) cites *The 2003 OCLC Environmental Scan: Pattern Recognition,* to show that 75% of the world's library

spending is concentrated in five countries – the United States, Japan, the United Kingdom, Italy and France. Globally, spending on libraries in Africa is substantially lower than in all other regions of the world, except for the Middle East.

It is my contention that the capacity to share is influenced by the overlapping interaction of the following aspects of library operation:

- physical and infrastructural features
- the organizational structures
- staffing capacity and development
- information literacy, electronic and ICT facilities/digital/internet/e-mail/digitizing projects
- benefits of links with Higher Education

To the extent that provision and quality in these five areas is not well developed, the capacity to co-operate and share resources is constrained. It takes time, commitment, effort and resources to develop the parallel ability of internal functioning and external co-operation and sharing.

In addition to the physical and organizational aspects of libraries, the capacity of libraries to share is affected by the ability to attract and retain librarians of quality. Librarians with high levels of professionalism and information literacy will promote an ethos of co-operation and sharing and articulate a world view that there are great benefits to be had from sharing (making the costs of investing in it worthwhile). In the digital age, the capacity of libraries to share resources is dependent not only on the accession, cataloguing and exchange of physical books and journals, but on access to and use of e-mail, the internet, and digital media.

My experience of working in the SAIAB Library illustrates well the interaction at play in the five aspects listed above. As indicated in Appendix A, the SAIAB Library is relatively well resourced (although still not yet fully automated), in comparison with most other fisheries libraries in Africa. In terms of staff development, it has taken time since my appointment as a SAIAB librarian in February 2003 to gain a clear understanding of the internal operation of SAIAB as an organization, to build up knowledge and information literacy with respect to the fisheries and aquaculture environment, to develop contacts and build relationships, and to offer an efficient library service to local users and to the SAIAB-FAO network (to be discussed in the next section of the paper).

The SAIAB Library aims to maintain an accessible facility so material is easily available and obtainable. It offers user assistance, books and journals loans, literature searches and an inter-library loan facility. For the period January to June 2005, a total of 1 166 items were issued to SAIAB Library users. Library instruction to Rhodes and Fort Hare students takes place at various levels. At Level 1, students are introduced to the library,

the OPAC, and facilities on offer. At Level 2, postgraduate students are given a more detailed introduction to electronic resources available. Group instruction takes place in the Rhodes University Library computer laboratory, with the assistance of Rhodes library staff.

Significant developments have occurred in the sphere of enhancing information literacy. This is a dual challenge. The first is continually to develop the librarian's knowledge of electronic resources and competence in using them. The second is to share this knowledge and competence interactively with students and researchers. Information literacy is not only a pre-requisite for effective and informed research; it is a vital pre-requisite for citizens to create new knowledge and participate in today's information-intensive societies. As Bundy (2004) puts it, people who are information literate are 'able to recognize their need for information, and then able to identify, locate, access and synthesize, evaluate and apply the needed information.' Information literacy is vital for lifelong learning.

There is an increasing demand for librarians to be adept in using and evaluating internet and electronic resources. 'Understanding the overlaps and disparities between bibliographic databases is an essential tool in any librarian's repertoire.' (Parker, 2005) Awareness of search engines, their capabilities and shortcomings, remains a constant challenge (Valiela & Martinetto 2005). A particularly useful role that librarians need to play is in providing overviews of, and entry points into, the complex and expanding world of electronic information. A recent example is Peter Fritzler's (2005) overview of marine science resources.

There are particular challenges facing the librarian in the South African context. Due to the First/Third World divide and the legacy of apartheid, there are widely varying levels of information competence in the student and user population. The librarian has to discern individual competence and develop appropriate educational strategies, ranging from basic to more complex instruction.

The capacity advantages provided by ICT and reflections on constraints in the African context

ICT is often perceived as the solution to the 'information gap' and needs in the developing world. However, it is essential to note (Takawira 2004) that digital development in Africa has been uneven and that in 'Africa which has a population of over 700 million, fewer than 1 million people had access to the Internet in 1998 and of this number 80% were in South Africa. Among the other 20% the ratio of people who have access to the Internet to those who do not is 1 to 5 000, while the United States or Europe the ratio is 1 to 6.' The more recent investigation, undertaken by Diana Rosenberg for INASP, on the current digital status of university libraries in Africa highlighted the limits of ICT facilities. Although only 2 of the 107 libraries surveyed reported no computers for users, 'the number of computers was generally low, with the majority of libraries reporting less that 1 computer per 500 FTE students.'

Internet connectivity is also uneven. Limited bandwidth, slow speeds and lack of reliability are barriers to the real benefits of what is taken for granted in the first world as an essential resource in the information arena. For example, at NIFRR in Nigeria there is no Internet access in the Library. The librarian can only gain Internet access at the Computer Centre in another building and the cost of Internet usage are relatively high.[1] To cite another example (Jiagge 2003), the Internet for Water Research Institute library in Ghana was assisted by seed funding from IAMSLIC and now, although they have a Local Area Network, 'unfortunately it is quite slow, especially during the daytime.' Some participants at the September 2005 AFRIAMSLIC conference in Accra commented that they had found it best to go to their libraries at night or over the weekend in order to download and print from the Internet. Other comments at the same conference addressed the difficulties of sending and receiving PDFs as e-mail attachments, due to limited computing facilities.

Despite the problems the Internet does provide a considerable degree of access to global literature and information and has the potential to be used more extensively for accessibility and exposure of African research. A good example from the Rhodes University campus, to which SAIAB is affiliated, is the significant increase in usage of Fish and Fisheries Worldwide (FFW) database after multiple user internet access was made available. Prior to increased online access, users would have to come to the library to request the CD Rom for usage on the library computer. Approximately 1 to 5 people used the CD Rom per day. Increased online access to this NISC database via Biblioline has been available since March 2005. The new agreement with NISC allows 10 concurrent users. Comparative data for the periods before and after increased online access illustrate well the significant increase in research activity. The average monthly number of searches between April 2004 and February 2005 was 162, compared to the average of 559 for the period March to June 2005.

In another example, the Namibian Ministry of Fisheries and Marine Resources have online access via Biblioline to two databases produced by NISC: ABAFR (Aquatic, Biology, Aquaculture and Fisheries Resources) and MOFR (Marine, Oceanographic and Freshwater Resources).The figures suggest a relatively high usage, with 569 searches on ABAFR to date this year, and 504 searches on MOFR.[2] There are distinct research advantages provided by online access, as well as the capacity of database providers and librarians to track usage volumes and patterns. Those African fisheries institutions which have the capacity to purchase internet access to electronic resources stand to benefit greatly from the increased research facilities provided.

The above discussion of the capacity of African libraries to share information and resources highlights a number of themes. The first concerns the inter-connections between physical and organizational resources, staffing capacity, information literacy and

[1] Personal communication from Dr M O Ibeun, librarian, NIFRRI, September 2005.
[2] Information provided to the author from NISC, September 2005.

ICT facilities, and links with higher education and research. Good quality ICT facilities and Internet access are critical to effective sharing and co-operation.

Condition Three: There must be sharing momentum and sustainability

The first two conditions, outlined in the above sections, have addressed the availability of resources to share and the capacity to participate in sharing. A third condition needs to be added to these, namely, the creation of a momentum of sharing and the sustaining of that momentum. Sharing will be sustained if there is significant demand for it, and the capacity exists among African libraries to respond to the demand. At the broadest level, demand is determined by the volume of fisheries research and education occurring in African institutions. A significant momentum of demand and supply will enable individual libraries to overcome their locality and inertia as they connect to the networks of information exchange.

The main benefit of regional sharing is to minimize duplication of costly resources. The main benefit of international sharing is to enable access to a global pool of information and literature.

A number of expanding initiatives indicate increased accessibility to research material and a growing role and need for fisheries libraries in Africa to engage in these developments. Recent steps to improve ASFA's limited coverage of African publications have seen the creation of three new input centers in Nigeria, Mauritania and Tanzania. PERI (Programme for the Enhancement of Research Information) offered by the International Network for the Availability of Scientific Publications (INASP) is a programme to support capacity building in the research sector of developing countries by strengthening the production, access and dissemination of information and knowledge. PERI's goals include delivering ICT-enabled information, strengthening national research publications, enhancing the ICT skills of users, supporting country collaboration and networking, and initiating research and development. These goals are outlined at www.inasp.info/peri .

AGORA (Access to Global Online Research in Agriculture) was launched in October 2003, as a programme of FAO in collaboration with major scientific publishers, Cornell University and WHO. Within just two years, the access to journal titles through AGORA has jumped from 400 to 766. These journals are published in the fields of food, agriculture, environmental science and related social sciences. Over 50 journal titles are core fisheries and aquatic science titles. AGORA is available free or at low cost to students and researchers in qualifying not-for-profit institutions in eligible developing countries. It is accessed on www.aginternetwork.org/en. The Director of FAO's Library and Documentation Systems Division states that the 'growth of the AGORA initiative has been exceptional.' (http://www.fao.org/waicent/portal/detail_event.asp)

An analysis of the AGORA registered institutions in September 2005 indicates a highly positive response from Africa. Globally, there is a total of 529 institutions registered from 58 countries. Within Africa, 343 (64.8% of the total) institutions are registered from 34 countries.[3] There are a number of fisheries research institutes in the FAO Directory who are not registered with AGORA and further analysis of this needs attention.

The FAO-SAIAB network project and AFRIAMSLIC
A pilot Project was implemented in 2002 to establish a core group of libraries in selected fisheries institutions in Africa as participants in the FAO-FIDI programme to improve access to information and documentation, particularly in LIFDC countries. With FAO and SAIAB as the co-ordinating hubs, the Project sought to explore mechanisms and networks for the sharing of information resources and the supply of fisheries and aquaculture information and documentation amongst participating institutions.

SAIAB's Vision Statement commits it to 'Serving Africa's needs in understanding fisheries and aquatic environments'. According to its Mission Statement, the Institute strives to be 'an interactive hub … generating, disseminating and applying knowledge to understanding and solving problems on the conservation and wise use of African fishes and aquatic biodiversity.'

SAIAB is one of the leading aquatic research institutes in southern Africa, with a high profile across a number of fields. As the research report in SAIAB's *Highlights of the Year 2003/0*4 states:

'The fields of aquatic research covered are very broad and include studies on taxonomy, systematics, genetics, biology and ecology. Although fish taxonomic and systematic studies are still a cornerstone of research at the Institute, the majority of projects are directed primarily towards answering conservation and management orientated problems. Out of a total of 40 projects and programs, 27 are linked primarily to the marine and estuarine environments, with 13 being centered on freshwater habitats.'

SAIAB's research and partnership activities are serviced by the Margaret Smith Library, with its extensive holdings on fisheries and aquaculture, and by the National Fish collection, the largest in Africa. The Institute's Communications and Education Unit aims to disseminate research findings and, through its outreach programs, promote public awareness of aquatic sciences and environmental issues.

From its inception in the late 1960s, the Margaret Smith Library has been a facility shared between SAIAB and Rhodes University. It currently houses approximately

- 5 000 books
- 2 500 journal titles
  42 current subscriptions

[3] List of AGORA Registered Institutions on 13 September 2005, supplied to author by Jean Collins.

174 titles received on exchange agreements
60 titles from NISC

- 30 000 items in a reprint collection dating back to 1842
- 47 CD ROMs

The Rhodes Library uses the Millennium system (Innovative Interfaces) and, as a branch library, the SAIAB library is part of this system.

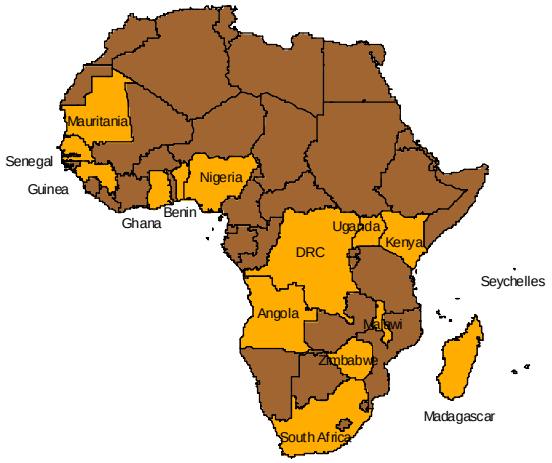
In 2003 a second phase of the FAO-SAIAB Project was initiated with the following aims:

- Maintain a directory of the participating institutions which have been selected by FAO on the basis of their active utilization of the ASFA or ABAFR databases and of their expressed need for full text documents.
- Identify suitable partners and assess the feasibility of national focal points for the network
- Maintain statistics on other African institutions requesting documents from the SAIAB library.
- Provide detailed statistics, and in particular to analyze the documents requested and measure the ability of the FAO and SAIAB libraries to meet these requests, with the goal of determining the information needs of fisheries institutions in Africa.
- Provide guidance to participating libraries on alternative locations for documents not held by SAIAB or FAO, such as full text access via the Internet or their availability on exchange from other fisheries institutions.
- Investigate linkages with the International Association of Aquatic and Marine Science Libraries (IAMSLIC).
- Evaluate the IAMSLIC union catalogue of periodicals as a regional resource for inter-lending and the incorporation of the SAIAB periodical holdings as a starting point. In addition, to propose mechanisms for including the fisheries and aquaculture serials published by the participating institutions to improve their dissemination and exchange.
- Extend, in collaboration with the participating institutions, the document supply services put in place during 2002 towards becoming a network for the exchange of documents and for information resources sharing.
- Organize a workshop during the last quarter of 2003 which consolidates the activities of the pilot and second phases of the Project and lays a platform for future advances in network collaboration.

The countries and institutions which have participated in the Network include the following:

COUNTRY	INSTITUTION
Eritrea	University of Asmara, Department of Marine Biology
Ghana	Water Research Institute
Guinea	Centre National des Sciences Halieutiques de Boussoura

Malawi	Bunda College of Agriculture
Malawi	National Aquaculture Centre
Mauritania	Institut Mauritanein de Recherches Océanographiques et des Pêches
Mozambique	Instituto de Desenvolvimento da Pesca de Pequena Escala
Mozambique	Ministério das Pescas
Nigeria	National Institute for Freshwater Fisheries Research
Senegal	Direction de l'Océanographie et des Pêches Maritimes
Uganda	Fisheries Resources Research Institute
Zambia	Central Fisheries Research Institute



During 2003, SAIAB received 28 contact requests from 7 of the participating African institutions over the 12 month period. A total of 340 journal articles were requested and SAIAB was able to supply 168 articles (49%). FAO supplied 68 articles (20%). Requests not supplied totaled 104 (31 %). A total of 195 different journal titles was requested. An average of 14 articles were dispatched from SAIAB each month. The majority of the requests received were from NIFFR in Nigeria (55.5%), followed by Bunda College in Malawi (35%), while 9.5% of the requests were received from 5 institutions in Guinea, Uganda, Ghana, Mozambique and Senegal. Thus 7 of the 12 institutions participated in the project in 2003. These statistics are recorded in the table below.

Requests Received and Supplied per Institution, January to December 2003

Institution	Total Requests	SAIAB	FAO	Not Supplied
Bunda	119	59	26	34
CNSHB	10	3	2	5
DOPM	1	1	-	0
FIRRI	11	9	2	0
IDPPE	2	2	-	0
NIFFR	189	92	35	62
WRI	8	2	3	3
NAC				
TOTALS	**340**	**168**	**68**	**104**

The figures of requests and deliveries for 2004 were as follows:

Requests Received and Supplied per Institution in Date Order: February to June 2004

	DATE	COUNTRY	INSTITUTION	TOTAL REQUESTS	SAIAB	FAO	AGORA	Not Suppl
1	12 Feb	Nigeria	NIFFR	18	12	2		4
2	18 Feb	Nigeria	NIFFR	14	2			
3	18 Feb	Nigeria	NIFFR	7	4			
4	26 Feb	Nigeria	NIFFR	23	14			
5	04 Mar	Nigeria	NIFFR	35	15			
6	11 Apr	Mauritania	IMROP	11	1			
7	05 May	Nigeria	NIFFR	22	13	4		5
8	26 May	Ghana	WRI	5	5			
9	16 June	Kenya	KMFRI	28	7		5	
10	23 June	Nigeria	NIFFR	38	19		3	
11	23 June	Nigeria	NIFFR	10	3		2	
			Totals	**211**	**95**		**10**	**9**

A wide range of journal titles were requested. The 211 requests included requests for 18 books and 130 different journal titles. NIFFR made 167 requests, accounting for 80% of the total. SAIAB was able to supply 49% of the articles requested and also advised that a total of 5 requests were accessible via AGORA. KMFRI made a total of 28 requests (13% of the total). SAIAB was able to supply 7 (25%) and advised that 5 titles could be accessed via AGORA. The remaining 16 requests (7%) were made from IMROP and

WRI and SAIAB was able to supply 6 of the 16. There were no requests at all for the period July to December 2004.

The figures of requests and deliveries for 2005 have been as follows:

Requests supplied by SAIAB to Institutions in Africa, January to June 2005

Country	Institution	Institution Total	Country Total
Kenya			**19**
	NEMA	19	
Malawi			**5**
	Bunda	5	
Mauritius			**6**
	MOI	6	
Nigeria			**6**
	NIFFR	1	
	Univ of Calabar	5	
South Africa			**92**
	Bayworld	11	
	CSIR	2	
	Dept of Agric	4	
	MCM	8	
	NMMU	4	
	ORI	10	
	Plant Protection Unit	1	
	Rand Water Library	1	
	Rhodes	1	
	UCT	19	
	UKZN	8	
	UNISA	7	
	UOFH	1	
	Univ of Limpopo	3	
	Univ of Stellenbosch	6	
	Univ of Wits	1	
	OUFS	2	
	West Coast Abalone	3	
Zimbabwe			**1**
	Univ of Zimbabwe	1	
	Total	**129**	**129**

The main focus of the Network at the outset was on document delivery. The highest volume occurred during 2003, with a decline in 2004 and 2005. The relatively small

number of requests could be due to institutions accessing literature needs via AGORA – as of September 2004, 233 institutions from 32 countries in Africa had registered with AGORA. Poor communication links continued to be a problem. Bunda and NIFFR experienced difficulties in maintaining e-mail contact. There appeared to be problems with the receipt of the ABAFR-NISC CD-ROMS mailed by NISC South Africa.

In addition to the focus on document delivery within the Network, the objectives have included promoting resource sharing between the institutions and the documenting of serial and grey literature. The second and third objectives were nurtured and strengthened when the participants met at the AFRIAMSLIC conference in Accra, Ghana, in July 2003 and then again in November that year at a networking workshop in Grahamstown, South Africa. Delegates at the Grahamstown conference assisted in providing updates to serial literature from their countries. They built contacts and shared information about their working environments – all very important in gaining an understanding of the broader picture (FAO 2004) The Grahamstown Workshop identified a WorkPlan for 2004 which included the following:

- Mapping fisheries information on the *Directory of Fisheries and Aquaculture Information Resources in Africa*.
- Identifying and auditing technology needs for document delivery.
- Entering African serial holdings on to the IAMSLIC Z39.50 Union List of Marine and Aquatic Serials to facilitate resource sharing.
- Registering for access to online services such as AGORA and PERI.
- Improving the capture, preservation and dissemination of African fisheries publications in print and digital format, and to pursue better coverage in international databases.
- Expanding the network and creating additional country network focal points in Nigeria (NIFFR) and Malawi (Bunda).
- Developing standardized methodologies (indexing, storage and retrieval) to enhance information dissemination and exchange.
- Exploring funding and grant proposals for network sustainability.

The WorkPlan crystallizes a framework for momentum and sustainability. Although progress has been slow in achieving these tasks, the September 2005 AFRIAMSLIC conference agreed that:

1. There is a need for a capacity audit of fisheries libraries in Africa. Although there are 36 African institutions which are IAMSLIC members, the majority have not participated in AFRIAMSLIC and there is lack of clarity about their facilities and capacity for resource sharing. This audit needs to address the extent of library automation. A questionnaire will be designed and circulated. Three member librarians have been tasked with this project.
2. Member libraries will enter their serial holdings on to the IAMSLIC Z39.50 Union List. The creation of a subset for the African region has the potential to facilitate resource sharing between African institutions under the umbrella of IAMSLIC. To date, only KIMFRI and SAIAB have made entries (Shaw 2005).

3. There should be African co-ordinating centers for collecting and digitizing marine and freshwater resources. Since KIMFRI is already active in the marine field, this should be supported and the proposal was made that SAIAB should become the co-ordinating centre in the freshwater field. In implementing this proposal from the SAIAB perspective, further investigation is needed to ascertain the quantity of grey literature in the freshwater field, to prioritize and establish realistic goals, to determine the human, financial and computing resources required.

These are significant steps in adding momentum to a framework for resource sharing amongst AFRIAMSLIC members. Initiatives in these areas will facilitate the linkages of local information and so broaden the research base and ultimately the knowledge base, for the region. E-content access and delivery is definitely a cost-effective and cost-efficient method of relaying information, but as highlighted above is dependent on a viable infrastructure of ICT facilities.

Conclusion

This paper has explored aspects of a framework for resource and information sharing between African fisheries libraries. It has been organized around a structure of asserting three necessary conditions for co-operation and sharing. The first condition is that there must be resources to share, the second that there must be capacity to share, and the third that sharing requires momentum and sustainability. Each condition has offered a mini-framework – part of a larger whole – for outlining and evaluating practices, challenges and constraints.

Six forms of resources available for sharing are addressed, ranging across electronic directories and catalogues, web-based systems and services, international databases, online electronic information resources, links with universities, to specialized local collections. The overall conclusions reached are that there are significant resources to share, and benefits to be gained from institutional networking and co-operation. At levels of national and international policy, there is widespread commitment in Africa to fostering research and education in science and technology, while recognizing that levels of research are not that high in comparative international terms. Fisheries and aquatic institutions have a critical role to play in these developments, and a particular challenge is to track and obtain grey literature. As Webster and Collins (2005) put it, 'Local information is the foundation for responsible fisheries management …and the challenge of identifying and collecting local fisheries information becomes an opportunity to increase access to it, both locally and internationally.'

With regard to the second condition for co-operation and sharing, the paper addresses the overlapping aspects of physical and infrastructural features, organizational structure, staffing capacity and development, information literacy, electronic and automation capacity, and the benefits of links with Higher Education. Examples are provided of the

inter-linking of capacity in the context of the SAIAB Library. Special attention is given to the capacity advantages provided by ICT and reflections are provided on constraints and opportunities in this arena in the African context.

Analysis of the African serials publication list maintained by the FAO Fisheries Library, gives rise to the need to ascertain with more effort what other fisheries-related information is being published in Africa. Tracking additional publications, and maintaining access to them, is difficult, even at a national level. This tracking is best done by librarians and information workers, who are in touch with the researchers in the field and so become alerted to reports that are written up. It is, furthermore, crucial to pursue digization projects in order to make the available accessible to a wider community.

The third condition for sharing addresses the critical issue of momentum and sustainability. The success of networks of access and supply is dependent on stakeholders' commitment to contributing information and to continuing to use the site. Co-operation is a key factor in moving forward. While the role of external agencies is often critical, both at the level of funding and expertise, long term sustainability requires initiative from participants within Africa.

These points are addressed in relation to new momentum provided by the expanding activities in Africa of ASFA and AGORA. The SAIAB-FAO network project in document delivery, established since 2002, is outlined and data of sharing provided. The last two AFRIAMSLIC conferences, held in Accra, Ghana, and a network workshop held in Grahamstown, South Africa, have contributed to conditions for momentum and sustainability. The September 2005 AFRIAMSLIC conference committed participants to a capacity audit, to the growth of serial holdings on the IAMSLIC Z39.50 Union List, and to the creation of an East African and a South African co-ordinating centre for collecting and digitizing marine and freshwater resources. These are important steps, taken by African librarians.

As a participant in giving momentum to co-operation and sharing, I have learnt a great deal about achieving a balance between maintaining and developing SAIAB's library facilities and services, on the one hand, and operating more broadly and creatively in networking, on the other hand. The challenges at SAIAB have included defining more accurately the tasks involved in co-ordinating networking, prioritizing the tasks, evaluating the resources needed, negotiating at an institutional level to have these priorities accepted, and motivating for funding, personnel and equipment. Throughout Africa the mindset that there is not much information to be accessed and exchanged from within the continent needs to be challenged. The current AFRIAMSLIC initiatives provide a promising framework for building up 'inter-reliability' in Africa. Formal and informal agreements between sharing institutions are vital to the continued co-operation of institutions. Personal contacts between librarians, especially if operating under a professional umbrella, are also critical to sustainability.

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APPENDIX A

Resume of a sample of fisheries libraries participating in the FAO-SAIAB Network

1. Bunda College of Agriculture (Malawi)

Library, Bunda College of Agriculture
University of Malawi
P O Box 219
Lilongwe
Malawi
Web site: http://chirunga.sdnp.org.mw/bunda/fish.htm

Contact:
Geoffrey Salanje, University Librarian
gsalanje@sdnp.org.mw

Staff:
There are 3 librarians, 6 library assistants, 2 messengers and 3 guards.

The College was founded in 1967. The Library is housed in a spacious building and open 7 days a week when classes are in session. The collection has approximately 40,000 books and 10,000 bound periodicals, and a special 'Malawiana' collection containing books and articles about Malawi or written by Malawians. The collection is funded by a variety of grants – a recent one being $30,000 from NORAD.

The library is a member of Malico.

2. Fisheries Resources Research Institute (Uganda)

Library and Information Centre
Fisheries Resources Research Institute
Jinja
Uganda

Contact:
Florence Kakoolwa

Staff:
1 librarian, assisted periodically by short-term contract staff.

The Institute was established in 1947, and the library moved into its own building in the 1970s. The collection includes 3,000 books, over 200 non-current journals and 5 current

journals, and a special collection on the African Lakes. The building of the collection is dependent on donations and exchanges.

3. Institut Mauritanein de Recherches Océanographiques et des Pêches (Mauritania)

IMPROP
B P 22
Nouadhibou
Mauritania
Website: http://www.improp.mr/

Contact:
Amady Sow
tijouceddo@yahoo.fr

The Institute was established in 1952. The Collection includes 8,500 books and 92 serial subscriptions. CDS ISIS has been used for more than 12 years for collection management. As part of ODINAFRICA, the In-Magic System is now used. IMPROP became an ASFA input centre in 2004.

4. Water Research Institute (Ghana)

Library: CSIR Water Research Institute
P O Box M32
Accra
Ghana
Website: http://www.csir.org.gh/wri.html

Contact:
Marian Jagge, Librarian
marianj@csirwater.org or mjiagge@yahoo.com

Staff:
One professional librarian, 1 para-professional

The WRI was established in 1966. The library collection covers aquaculture, marine sciences, surface water, ground water, microbiology, health, environmental biology, environmental chemistry. The Library uses WinISIS software. Access to the Internet is available. Internet resources included PERI, TEFAL, and AGORA.